

Coronavirus Disease 2019 (COVID-19) Pandemic

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ABSTRACT

A pandemic that is so sudden and travels so quickly and surely in all parts of the world has an impact on an emergency. A fast, precise, effective, and efficient handling of a pandemic is urgently needed. This literature review aims to present the latest treatments for the Coronavirus Disease 2019 (COVID-19) pandemic based on the results of related studies from 2019-2020. Using 8 databases (Pubmed.gov, Medscape.com, Sciencedirect.com, Google Scholar, Nejm.org, ResearchGate, Garuda Portal, and Thelancet.com) data were searched between 2004 and 2020 in the form of research journals, articles, literature reviews, and handbooks discussing Corona Virus Disease 2019 (COVID-19). Keywords: Coronavirus, Coronavirus disease 2019, COVID-19 to search electronic databases. Journals, articles, literature reviews, and handbooks that are found in accordance with the keywords are then screened and viewed as abstract/full text. Management in the form of basic protection, carrying out surveillance and isolation activities, using personal protective equipment, especially for medical personnel, increasing self-immunity, and controlling comorbid diseases must be carried out to prevent further spread because currently, several antiviral drugs and vaccines are being tested for their effectiveness.

Keywords: pandemic; Coronavirus Disease 2019; COVID-19

INTRODUCTION

On December 31, 2019, China reported a case of mysterious pneumonia of unknown cause. Within 3 days, patients with these cases totaled 44 patients and continued to grow to thousands of cases (PDPI, 2020). The first case of pneumonia reported in Wuhan had a history of visiting a local seafood market where wild animals were also sold. (Abduljali & Abduljali, 2020). The results of preliminary epidemiological investigations reinforce this; most of the cases in Wuhan have a history of working, handling, or frequent visitors to the Huanan seafood market (Ministry of Health of the Republic of Indonesia, 2020). On January 7, 2020, the Chinese authorities announced a new type of coronavirus (Sahin et al., 2020). Initially, this disease was temporarily named as 2019 novel coronavirus (2019-nCoV), then WHO announced a new name on 11 February 2020, namely Coronavirus Disease 2019 (COVID-19), which is caused by the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) virus (Susilo et al., 2020).

Based on data until February 12, 2020, the worldwide mortality rate is 2.1%; specifically, in the city of Wuhan, it is 4.9%, and in Hubei province, it is 3.1% (PDPI, 2020). Coronavirus Disease 2019 (COVID-19) is not the first outbreak of severe respiratory disease caused by a coronavirus. In the last two decades, the coronavirus has caused three epidemic diseases, namely Severe Acute Respiratory Syndrome (SARS), Middle Eastern Respiratory Syndrome (MERS), and Coronavirus Disease 2019 (COVID-19) (Li, Geng, Peng, Meng, & Lu, 2020). The cumulative total of cases is around 10,000 (1,000 MERS cases and 800 SARS cases). Mortality due to SARS is around 10%, while MERS is around 40% higher (PDPI, 2020). WHO declared SARS-CoV-2 a public health emergency of international concern on 30 January 2020 (Abduljali & Abduljali, 2020). It can pose risks for many countries and require a coordinated international response (Li et al., 2020). On March 11, 2020, WHO declared Coronavirus Disease 2019 (COVID-19) a pandemic (WHO, 2020c).

Coronaviruses are zoonotic pathogens present in humans and various animals with a high mutation rate and a variety of clinical features from an asymptomatic course to the need for hospitalization in an intensive care unit; they cause infections in the respiratory, digestive, liver, and neurological systems (Sahin et al., 2020). This virus can be transmitted from human to human and has spread widely in China and over 190 countries; until March 29, 2020, there were 634,835 cases and 33,106 deaths worldwide (Fahmi, 2020). Meanwhile, in Indonesia, on March 2, 2020, the Indonesian government finally announced the first case of Coronavirus Disease 2019 with 2 infected people who

originated from the transmission of Japanese citizens who visited Indonesia and were found to be positive for Coronavirus Disease 2019 (COVID-19), and in Malaysia on 27 February 2020, as a form of handling the 2019 Coronavirus Disease). The Indonesian government has prepared 100 hospitals with isolation rooms according to standards and equipment according to applicable international regulations (Kompas, 2020). As of April 1, 2020, there have been 1,677 positive cases and 157 deaths (CNN, 2020).

A pandemic that is so sudden and travels so quickly and surely in all parts of the world has an impact on an emergency, so a fast, precise, effective, and efficient handling of a pandemic is urgently needed. Act quickly, precisely, effectively, and efficiently as a health team with adequate knowledge, insight, and competence related to Corona virus disease 20019. The Covid-19 pandemic caused by the novel coronavirus is an unprecedented disease with a tremendous impact on all of humanity, especially health workers, with long-term consequences that still need to be explored and understood in more detail in order to be able to provide appropriate services as well as provide satisfaction and safety for the health team and patients (Zainuri, A. 2022). This pandemic condition will also cause psychosocial responses such as the risk of virus contamination, anxiety, stress, decreased immune system, and social pressure on society in general and especially for health workers at the frontline in handling the Covid-19 pandemic (Manurung et al., 2021). Thus, health workers and the public must know and understand Coronavirus disease to reduce and prevent the spread and contamination of the virus and its handling. This led to the author's interest in conducting a literature review on Corona Virus Disease. The literature review aims to explore the virology, transmission, risk factors, clinical manifestations, treatment, and prognosis of coronavirus disease 2019.

METHOD

The review method with the research design is reviewing the literature review. inclusion criteria: full-text literature, abstract articles, and handbooks with a descriptive approach to Coronavirus Disease 2019 (COVID-19). The literature search in this literature review uses 8 foreign and domestic databases: Pubmed.gov, Medscape.com, Sciencedirect.com, Nejm.org, ResearchGate, Thelancet.com, Garuda Portal, and Google Scholar. The articles you are looking for are articles between 2004 and 2020. Keywords: Coronavirus, Coronavirus disease 2019, COVID-19.

RESULT

Search results from 8 databases obtained 67 articles, and those that met the criteria according to the topics of 19 articles were as shown in the following table.

Table 1. Data search results for articles Coronavirus Diseases 2019, Period from 2004 to 2020

No	Researcher	Title	Method	Results
1	Abduljali, J. M., & Abduljali, B. M. (2020)	Epidemiology, Genome and Clinical Features of The Pandemic SARS-CoV-2	Review journals and research on SARS-CoV-2	The global epicenter of SARS-CoV-2 is expected to double, especially in poor countries. Genomic, virological, and medical analysis are advancing at an unprecedented pace.
2	Adnan, M., Khan, S., Kazmi, A., Bashir, N., & Siddique, R. (2020)	COVID-19 Infection: Origin, Transmission, and Characteristic of Human	Review journals and research on COVID-19	The zoonotic source of SARS-CoV-2 was not confirmed, however, sequence-based analysis suggested bats as the main reservoir
3	Alhazzani, W., Møller, M. H., Arabi, Y. M., Loeb, M., Gong, M. N., Fan, E., ... Rhodes, A. (2020).	Surviving Sepsis Campaign: Guidelines On The Management of Critically Ill Adults With Coronavirus Disease 2019 (COVID-19)	Panel of 36 experts from 12 countries. All members complete the WHO conflict of interest disclosure form. The panel proposed 53 questions relevant to the management of COVID 19 in the ICU.	The Campaign COVID-19 Sepsis Surviving Panel issued 53 statements, including best practice statements, 9 strong recommendations, and 35 weak recommendations & there were 9 questions with no recommendations on the topic: 1 infection control, 2 diagnosis and laboratory specimens, 3 hemodynamic support, 4 ventilation support, and COVID-19 therapy.

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No	Researcher	Title	Method	Results
4	Arentz, M., Yim, E., Klaff, L., Lokhandwala, S., Riedo, F. X., Chong, M., & Lee, M. (2020).	Characteristics and Outcomes of 21 Critically Ill Patients With COVID-19 in Washington State	Descriptive	Of the 21 cases with an average age of 70 years (43-92 years); 52% male. Comorbidity 18 cases (86%). Symptoms: shortness of breath 76%, fever 52%, and cough 48%. The average symptom was 3.5 days prior to hospitalization, and 81% of the 17 patients were admitted to the ICU. Abnormal chest radiographs 95%.
5	Cai, H. (2020)	Sex Difference and Smoking Predisposition In Patients With COVID-19	Descriptive	Differences in the prevalence and severity of COVID-19 disease are associated with gender, and smoking is associated with higher ACE2 (receptor) expression.
6	Cao, B., WaY., Wen, D., Liu, W., Wang, J., Fan, G., Wang, C. (2020)	A Trial of Lopinavir–Ritonavir in Adults Hospitalized with Severe Covid-19	Randomized, controlled trial	Intervention-to-treat analysis, lopinavir-ritonavir resulted in a median time to clinical improvement of 1 day shorter with standard care (hazard ratio, 1.39; 95% CI, 1.00-1.91).
7	Chen, J., Qi, T., Liu, L., Ling, Y., Qian, Z., Li, T., ... Lu, H. (2020).	Clinical progression of patients with COVID-19 in Shanghai, China	This retrospective, single-center study, we included cases of COVID-19	Most cases of COVID-19 are mild. The pattern of clinical development early control of viral replication and implementation of later stage therapy is very important to improve the prognosis of COVID-19
8	Guan, W., Ni, Z., Hu, Y., Liang, W., Ou, C., He, J., ... Zhong, N. (2020)	Clinical Characteristics of Coronavirus Disease 2019 in China	Data extraction of 1099 Covid-19 patients with laboratory confirmation from 552 hospitals in 30 provinces,	Symptoms: fever 43.8% on admission and 88.7% during hospitalization and cough 67.8%. Diarrhea 3.8%. The average incubation period is 4 days (interquartile range 2–7). Chest CT radiological findings 56.4%. No CT radiographic abnormalities were found in 157 (17.9%) of 877 patients with non-severe disease and in 5 (2.9%) of 173 patients with severe disease. Lymphocytopenia 83.2% of patients
9	Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu, Y., ... Gu, X. (2020)	Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China	Data were obtained using WHO standard data forms and the International Severe Acute Infection Consortium and electronic medical records and communicating directly with patients/families. The results were compared with the data of treated patients	Symptoms: fever 40 (98%), cough 31 (76%), myalgia 18 (44%); Dyspnoea 22 (55%) mean time of dyspnoea 8.0 days (IQR 5.0–13.0). 26 (63%). All patients had pneumonia with abnormal chest CT. Complications of acute respiratory distress 12 (29%), RNA anemia 6 (15%), acute heart injury 5 (12%) and secondary infection 4 (10%). Patients admitted to ICU 13 (32%) and 6 (15%) died.
10	Lauer, S. A., Grantz, K. H., Bi, Q., Jones, F. K., Zheng, Q., Meredith, H. R., ... Lessler, J. (2020).	The Incubation Period of Coronavirus Disease 2019 From Publicly Reported Confirmed Cases: Estimation and Application	Aggregated analysis of confirmed COVID-19 cases reported between 4 January 2020 and 24 February 2020	The mean incubation period is 5.1 days (95% CI 4.5 – 5.8 days). This estimate implies that, under conservative assumptions, 101 out of every 10,000 cases (99th percentile, 482) will develop symptoms after 14 days active monitoring or quarantine

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No	Researcher	Title	Method	Results
11	Long, Y., Cheng, Y., Hu, T., Huang, J., Liu, L., Du, L., ... Yang, L. (2020).	Effectiveness of N95 respirators versus surgical masks against influenza: A systematic review and meta-analysis.	A systematic review and meta-analysis.	A total of six RCTs involving 9,171 participants. There was no statistically significant difference in preventing influenza (RR = 1.09, 95% CI 0.92-1.28, P> 0.05), viral infections (RR = 0.89, 95% CI 0.70- 1.11), and influenza (RR = 0.61, 95% CI 0.33-1.14) using N95 respirators and surgical masks.
12	Qingxia, C., Yang, M., Liu, D., Chen, J., Shu, D., Xia, J., Liu, L. (2020).	Experimental Treatment with Favipiravir for COVID-19: An Open-Label Control Study.	An Open-Label Control Study.	There were no significant differences between the baseline characteristics of the two groups
13	Salehi, S., Abedi, A., Balakrishnan, S., & Gholamrezanezhad, A. (2020).	Coronavirus Disease 2019 (COVID-19).	A Systematic Review of Imaging Findings in 919 Patients	Features of COVID-19 on initial CT multilobar bilateral ground-glass opacification (GGO) peripheral or posterior distribution, in the lower lobes. Late stages may include septal thickening, bronchiectasis, pleural thickening, pleural effusion, pericardial effusion, lymphadenopathy, cavitation, and pneumothorax. Intermediate stage in number and size, progressive transformation of GGO to multifocal consolidated opacities, with CT severity on day 10. Basic acute respiratory distress syndrome transfers patients to ICU and is a major cause of death. A pattern of clinical improvement occurred after 2 weeks including gradual resolution of the consolidated opacities and a decrease in the number of lesions.
14	Shi, H., Han, X., Jiang, N., Cao, Y., Alwalid, O., Gu, J., Zheng, C. (2020).	Radiological findings from 81 patients with COVID-19 pneumonia in Wuhan, China: a descriptive study. The Lancet Infectious Diseases,	Descriptive study.	Retrospective patients 81. Cohort 42 (52%) males and 39 (48%) females mean age 49.5 years (SD 11.0). The mean number of lung segments involved 10.5 (SD 6.4), 2.8 (3.3) in group 1, 11.1 (5.4) in group 2, 13.0 (5.7) in group 3, and 12.1 (5.9) in group 4. The pattern of primary abnormality was bilateral 64 (79%), peripheral 44 (54%), unclear 66 (81%), and glass-soil turbidity 53 (65%), mainly involving the right lower lobe in 225 (27%) of the 849 affected segments. The lesions rapidly evolved to a predominance of bilateral ground-glass opacity 19 (90%), diffuse 11 (52%) 17 (81%) in group 2 (n = 21). The prevalence of glass-soil turbidity continued to decrease in 17 (57%) of 30 patients in group 3, and in 5 (33%) of 15 in group 4. The mixed pattern was more frequent in 12 (40%) in group 3, 8 (53%) in group 4)

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No	Researcher	Title	Method	Results
15	Verity, R., Okell, L. C., Dorigatti, I., Winskill, P., Whittaker, C., Imai, N., Ferguson, N. M. (2020).	Estimates of the severity of coronavirus disease 2019	A Model-Based Analysis.	The median duration from symptoms to death was 17•8 days 95% credible interval (CRI) 16•9–19•2 and to discharge from hospital being 24•7 days (22•9–28•1). Across all laboratories confirmed and clinically diagnosed (n = 70117), the fatality ratio was 3•67% (95% CRI 3•56–3•80). for demographics, the best estimate of the case fatality ratio is 1.38% (1•23–1•53), with the ratio higher in the older age group 0•32% (0•27-0•38) at ages <60 years vs 6•4% (5•7–7•2) at ages ≥60 years, to 13•4% (11•2–15•9) at ages 80 or older, to 13•4% (11•2–15•9) at age 80 or older.
16	Yang, X., Yu, Y., Xu, J., Shu, H., Xia, J., Liu, H., Shang, Y. (2020).	Clinical Course and Outcomes of Critically Ill Patients with SARS-CoV-2 Pneumonia in Wuhan, China	A Single-Centered, Retrospective, Observational Study.	Main outcome 28-day mortality. Secondary outcomes included the incidence of SARS-CoV-2-associated acute respiratory distress syndrome (ARDS) and the proportion of patients requiring mechanical ventilation.
17	Ye, G., Pan, Z., Pan, Y., Deng, Q., Cheb n, L., Li, J., ... Wang, X. (2020).	Clinical Characteristics of Severe Acute Respiratory Syndrome Coronavirus 2 Reactivation	Retrospective Evaluation of Clinical Characteristics of SARS-CoV-2 Reactivation	The findings from this small group of cases suggest that there is currently evidence for reactivation of SARS-CoV-2 and there may not be specific clinical characteristics to differentiate it.
18	Young, B. E., Ong, S. W. X., Kalimuddin, S., Low, J. G., Tan, S. Y., Loh, J., ... Lye, D. C. (2020)	Epidemiologic Features and Clinical Course of Patients Infected with SARS-CoV-2 in Singapore	Investigation of the Epidemiology of this Outbreak, Clinical Features, and Management	Clinical presentation Upper respiratory tract infection in 12 (67%), and viral shedding from the nasopharynx for 7 days or longer. Management requires oxygen as well as intensive care, virus detected in feces and urine, additionally treated with lopinavir-ritonavir.
19	Zha, L., Li, S., Pan, L., Tefsen, B., Li, Y., French, N., Villanueva, E. V. (2020)	Corticosteroid Treatment of Patients with Coronavirus Disease 2019 (COVID- 19)	Observational study at two COVID-19 designated hospitals	Cox's proportional hazard regression analysis showed no association between corticosteroid treatment and viral clearance time

DISCUSSION

Coronavirus belongs to the order Nidovirales, family Coronaviridae. The structure of coronavirus forms a spherical or elliptical structure with the S protein located on the virus's surface. Transmission of COVID-19 from human to human occurs due to close contact with infected people, coughing, sneezing, droplets or aerosols, and the life cycle of SARS-CoV-2; it is suspected that after the virus enters the host cell, the viral RNA genome will be released into the cytoplasm of the cell and transfused into two polyproteins and a structural protein. Next, the viral genome will begin to replicate. The glycoprotein in the newly formed viral envelope will enter the membrane of the endoplasmic reticulum or Golgi cells and then form a nucleocapsid composed of genomic RNA and nucleocapsid proteins. Then these virus particles will grow into the endoplasmic reticulum and Golgi cells. In the final stage, the vesicles containing the virus particles fuse with the plasma membrane to release new viral components. Risk factors for SARS-CoV-2 infection include a history of comorbid diseases such as hypertension and diabetes mellitus, active smoking, cancer, and chronic liver disease. Male sex and age > 60 years. The main clinical symptoms are fever (temperature ≥38 °C), cough, and difficulty breathing. In addition, it can be accompanied by severe tightness, fatigue, myalgia, gastrointestinal symptoms such as diarrhea and other respiratory symptoms. In contrast, ARDS, septic shock, metabolic acidosis, and bleeding are

found in severe cases with rapid and progressive worsening. Examinations for handling COVID-19 include laboratory examinations, radiological examinations, virological examinations, specimen collection, and antigen-antibody examinations. Diagnosis in Indonesia consists of people under monitoring (ODP) indicated for someone who has symptoms of fever (≥ 38 °C) or a history of fever or ARI without pneumonia and has a history of travel to an infected country within 14 days before symptoms appear. A patient under surveillance (PDP) tested for COVID-19 but has an inconclusive result or someone with a positive confirmation result for pan coronavirus or beta coronavirus. A confirmed case is a positive laboratory test result for Coronavirus Disease 2019 (COVID-19), regardless of the clinical findings. In addition, they are known as people without symptoms (OTG), people who do not have symptoms but have a risk of contracting or have close contact with patients with COVID-19. Treatment consists of definitive therapy, symptomatic management, and management of critical COVID-19 patients. Prevention consists of making vaccines, but until now, clinical trials and evaluation of vaccines are still being developed; basic protection, surveillance and isolation activities, use of personal protective equipment, especially for medical professionals, increasing self-immunity, and controlling comorbid diseases. The prognosis for patients infected with COVID-19 is reported to be 61.5% of patients dying within 28 days, and the average time from admission to the intensive care unit to death is 7 days.

CONCLUSION

Management in the form of basic protection, carrying out surveillance and isolation activities, using personal protective equipment, especially for medical personnel, increasing self-immunity, and controlling comorbid diseases must be carried out to prevent further spread because currently, several antiviral drugs and vaccines are being tested for their effectiveness. To respond to this situation, it is suggested that the public adopt clean and healthy living habits, eat a balanced nutritional diet, avoid smoking, exercise, have independent social isolation, maintain a minimum distance of 1 meter, and always wear a mask. For medical personnel to be disciplined in using personal protective equipment according to the standard procedure, the government must involve various parties and components in dealing with this pandemic.

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